

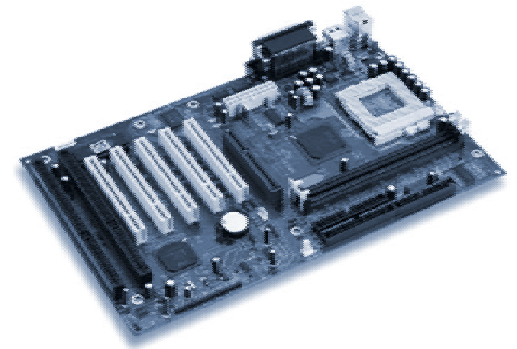
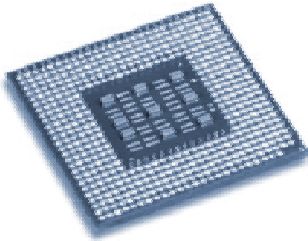
# BASIC HARDWARE

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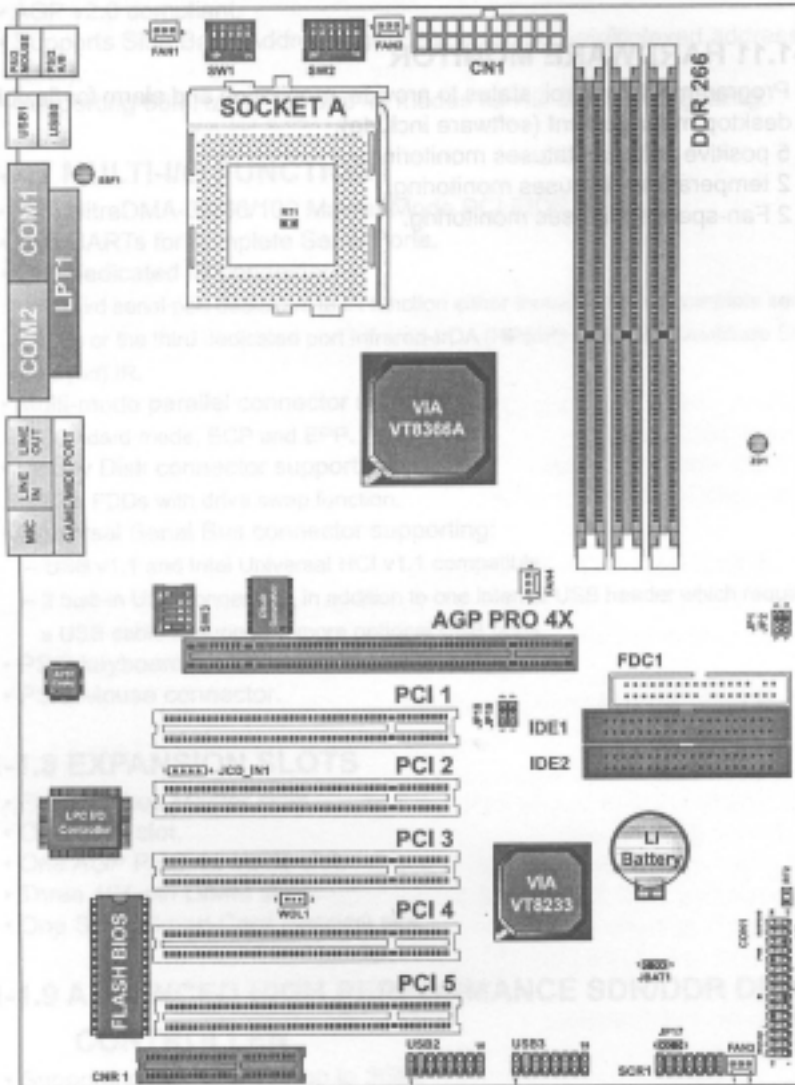
based upon

"Hardware bàsic de PC" Sergi Salas



## Main Board or Mother Board

- It is the most important element. The whole PC architecture is build on the main board.
- All devices and peripherals are connected to mother board.
- If we have a look at its basic structure we can easily identify:
  1. Microprocessor Socket
  2. BIOS (and Battery)
  3. RAM memory slots (DIMM, DDR, ...)
  4. Card Slots (PCI, ISA, AGP, ...)
  5. Chipset
  6. Connectors
    - PS/2 (Keyboard, Mouse)
    - USB
    - IDE Bus
    - Serial and parallel ports (COM & LPT1)
    - Power supply (CN1)



## Mother board



## BIOS

### (Basic Input/Output System)

- It is a memory (ROM) keeping a group of routines needed to control system devices.
- It allows booting process.
- System configuration is saved in a CMOS memory needing a battery not to lose the information.

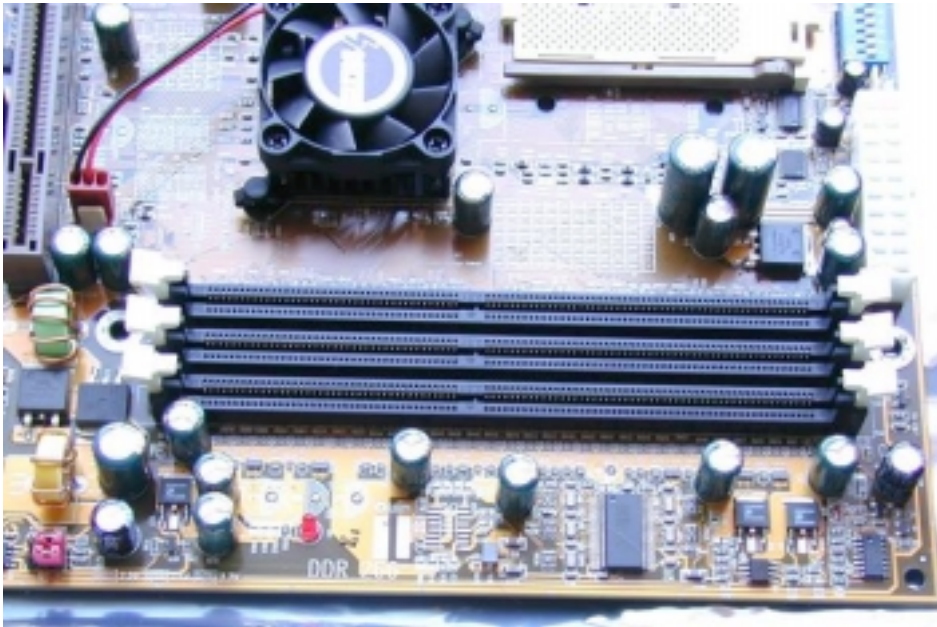


- Some of them allow to configure Microprocessor or bus clock speed above their recommended values. This process is called Overclocking.



### Memory

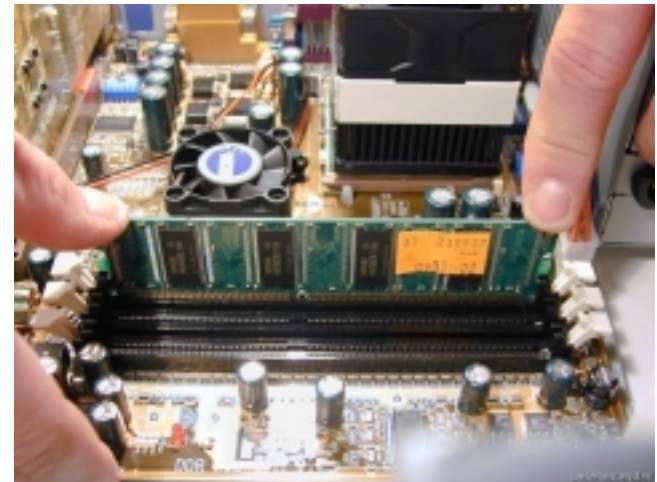
- **Caché Memory (L1, L2)**
  - Placed between RAM and Microprocessor.
  - It is extremely fast but with low capacity and high cost.
  - L1 is built in the Microprocessor.
  - L2 can be found on the Main Board.
  - Volatile (loses data when turned off).
- **RAM (Random Acces Memory)**
  - Stores data temporarily.
  - Higher capacity (Mbytes), cheaper and slower than Caché.
  - Need a refresh not to loose data.
  - Volatile (loses data when turned off).
- **ROM (Read Only Memory)**
  - No-Volatile



RAM memory slots on mother board

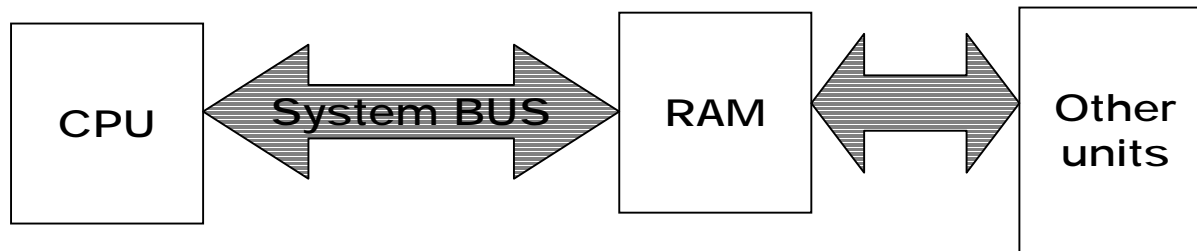


RAM card assembly



## Microprocessor

- Also known as CPU (Central Processing Unit).
- Processes the data arriving from storage units and peripherals.



- Modern Microprocessors work at two different speeds:
  - Internal: the speed at which data can be processed.
  - External: the speed used to communicate with Main Board.



**Microprocessor**



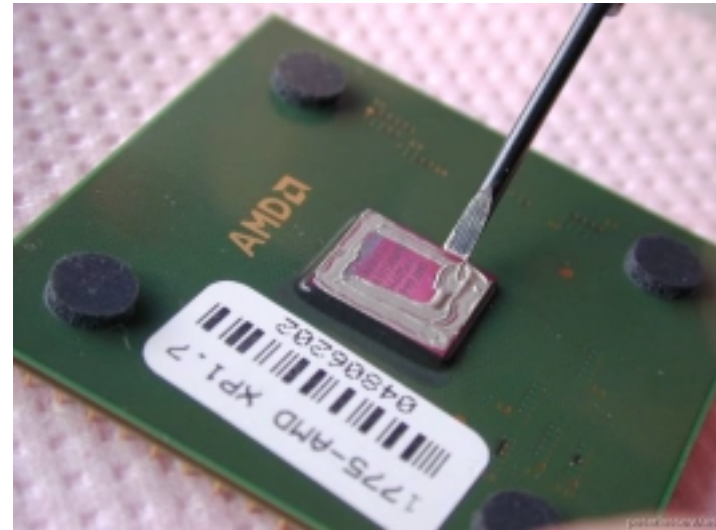
**Socket**

Placed on mother board allows  
microprocessor connection



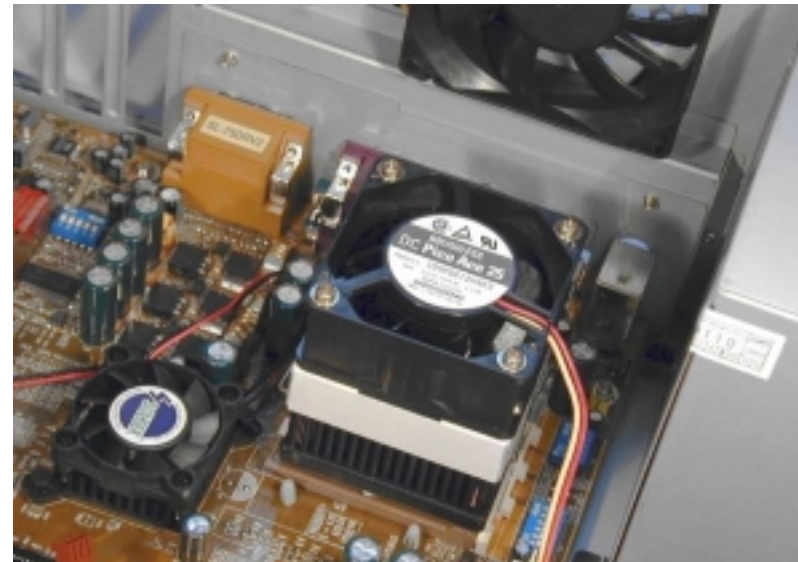
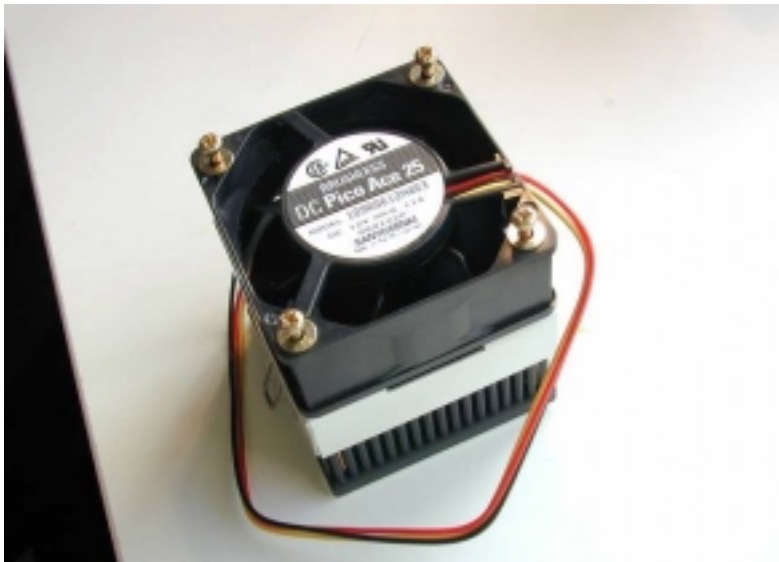
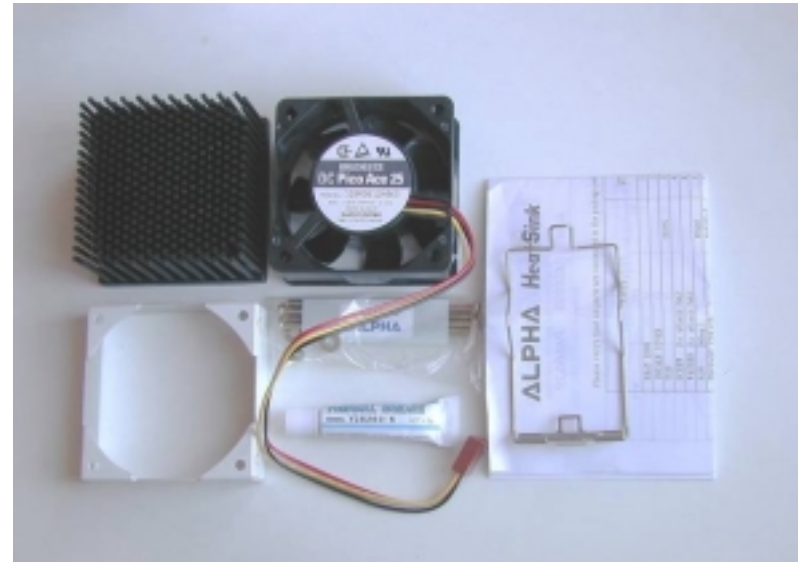
## Microprocessor

- In order to have optimum performance, overheating problems must be avoided.
- Thermic filling can help in heat dissipation.



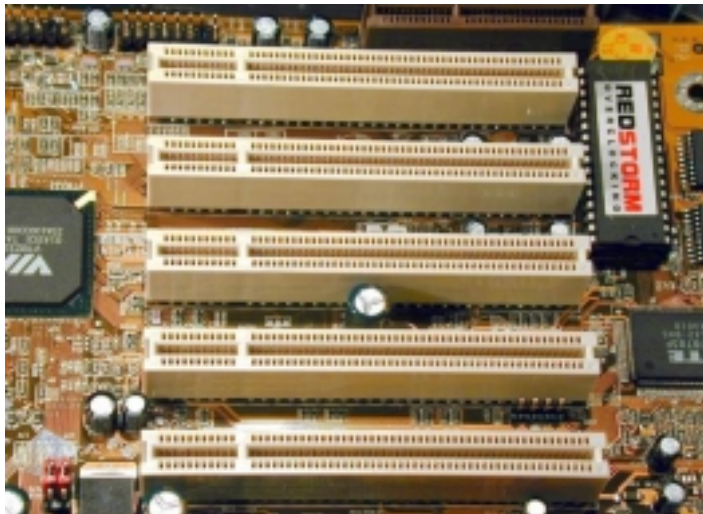
## Microprocessor

- Other cooling methods as a fan can also be helpful.



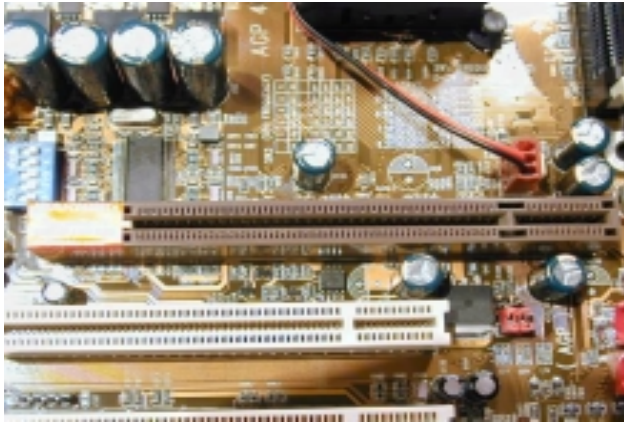
## PCI Slots

- PCI cards can be connected to PCI slots placed on the motherboard.
- This diverse purpose cards will appear perpendicular to the main board.
- Their external connectors will be accessible from the rear part in the PC tower.





## AGP (Accelerated Graphics Port)



Graphic card



Graphic card connected to the AGP Port



Graphic card output

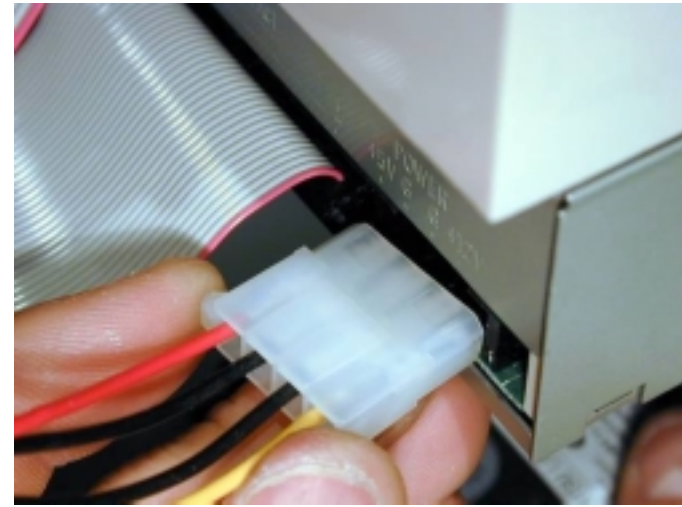




Power supply connector on Main Board



Rear connector in a AT power supply



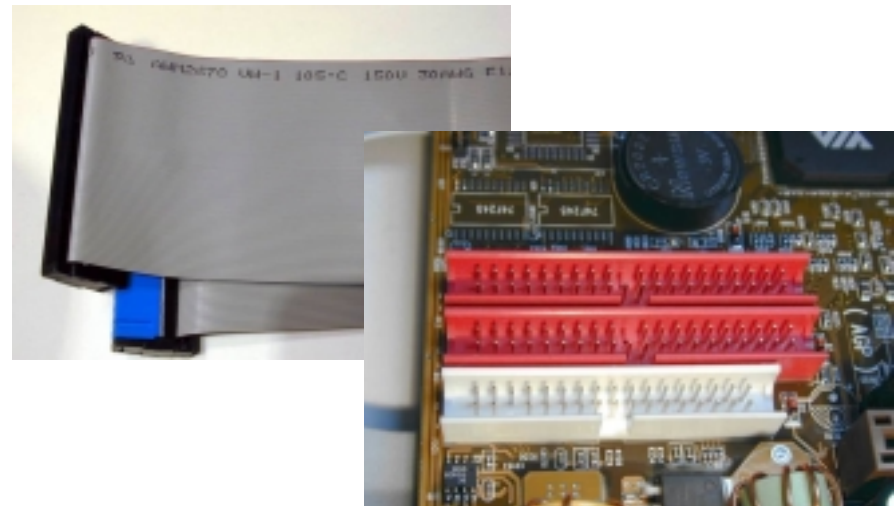
$\pm 12$  and  $\pm 5$  Volts are used to feed devices



IDE Hard disk assembling

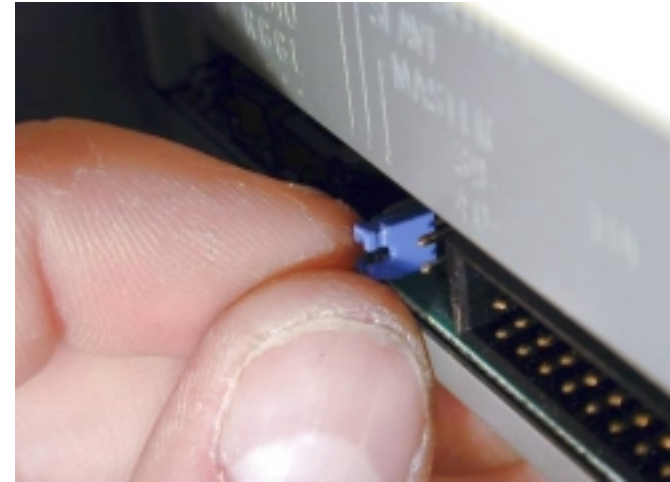
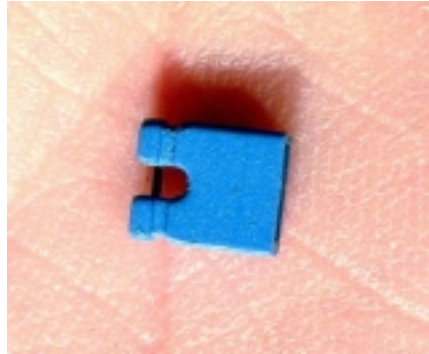


IDE BUS and connectors



## IDE Devices Setup

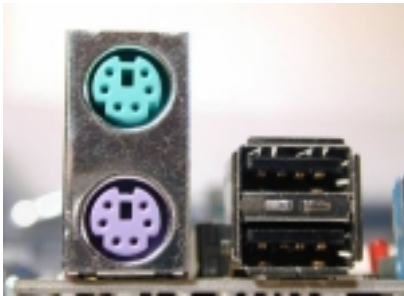
- There are two IDE connectors on Mother Board.
- Two devices can be connected in each bus.
- It is necessary to specify who is master and who is slave in Primary and Secondary IDE ports.
- To decide so we can apply a hardware setup using jumpers.
- Each device will know its role.





## Rear connectors

- Peripherals as mouse, keyboard, printer or speakers can be connected.



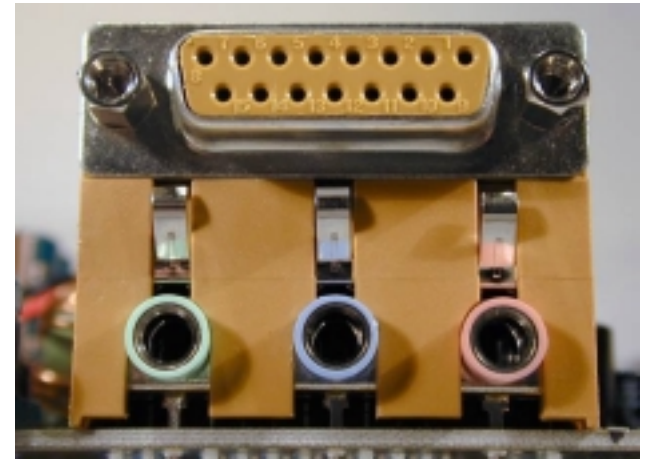
PS/2 and USB Ports



PS/2 mouse



Serial (COM 1 & 2) and  
Parallel (LPT 1) Ports



Games (Joystick, Pads)  
and audio ports (mic,  
speakers)



